

WHAT IS CLAIMED IS:

- 1 1. A method of transmitting data packets comprising:
2 identifying a priority of each packet of a plurality of packets to be
3 transmitted;
4 selectively transmitting higher priority packets before transmitting lower
5 priority packets of the plurality of packets;
6 receiving the transmitted packets;
7 smoothing the received data packets; and
8 playing-out the smoothed packets,
9 wherein, the step of selectively transmitting is performed by calculating a
10 probability of higher priority packets being delivered prior to play-out times for the higher
11 priority packets and transmitting a packet only if this probability is greater than a set
12 threshold.
- 1 2. The method of transmitting data packets of claim 1, further comprising:
2 determining whether sufficient time remains before a scheduled play-out
3 time of a previously not transmitted packet and, if so, transmitting the previously skipped
4 packet.
- 1 3. The method of transmitting data packets of claim 1, wherein the step of
2 selectively transmitting is performed based on channel conditions of channels upon which
3 the data packets are transmitted.
- 1 4. The method of data packet transmission of claim 1, wherein the step of
2 smoothing the received data packets includes storing the received packets in a smoothing
3 buffer and generating a transmission schedule, which includes the rates at which the data
4 packets will be played-out.
- 1 5. The method of data packet transmission of claim 4, wherein generating the
2 transmission schedule is performed based on a size of a buffer that will store received
3 packets, available bandwidth and allowed play-out delay.
- 1 6. The method of data packet transmission of claim 4, wherein the
2 transmission schedule is designed so that the smoothing buffer does not overflow or
3 underflow during play-out of the received data packets.

1 7. The method of data packet transmission of claim 1, wherein the step of
2 selectively transmitting performs transmission over wireless channels.

1 8. The method of data packet transmission of claim 1, wherein the set
2 threshold is between 0.7 and 0.9.

1 9. The method of data packet transmission of claim 1, wherein calculating a
2 probability of higher priority packets being delivered prior to play-out times for the higher
3 priority packets is performed by estimating the success probability that a first data packet
4 of the plurality of data packets will be delivered before the play-out time for the first data
5 packet.

1 10. The method of data packet transmission of claim 1, wherein the step of
2 selectively transmitting transmits data from the plurality of data packets in mini-slots.

1 11. The method of data packet transmission of claim 10, wherein calculating a
2 probability of higher priority packets being delivered prior to play-out times for the higher
3 priority packets is performed at an end of every mini-slot to determine whether to
4 transmit data in a next mini-slot.

1 12. The method of data packet transmission of claim 11, wherein the plurality
2 of data packets are video data packets.

1 13. A system for data packet transmission, the system comprising:
2 a central transmission unit including a unit controller coupled to a unit
3 buffer and a unit transceiver, the unit buffer also being coupled to the unit transceiver, the
4 unit buffer storing a plurality of data packets for selective transmission by the unit
5 transceiver;
6 a transmission channel that carries the plurality of data packets transmitted
7 by the unit transceiver,
8 wherein, the unit controller controls selective transmission of the plurality
9 of data packets from the unit transceiver along the transmission channel to client
10 equipment.

1 14. The system for data packet transmission of claim 13, wherein the plurality
2 of data packets are video data packets.

1 15. The system for data packet transmission of claim 13, wherein the client
2 equipment comprises:

3 a client transceiver that receives the selectively transmitted data packets
4 from the unit transceiver along the transmission channel;

5 a client equipment controller coupled to the client transceiver to control
6 reception of the data packets;

7 a client smoothing buffer that stores the data packets under the control of
8 the client equipment controller, a client smoothing buffer being coupled to the client
9 equipment controller; and

10 a client data play-out mechanism that plays-out the data packets from the
11 client smoothing buffer under the control of the client equipment controller, the client
12 data play-out mechanism being coupled to the client equipment controller.

1 16. The system for data packet transmission of claim 15, wherein the unit
2 controller generates the transmission schedule based on a size of the client smoothing
3 buffer, available transmission channel bandwidth and allowed play-out delay.

4
1 17. The system for data packet transmission of claim 13, further comprising:
2 a server that provides the plurality of data packets;
3 a wired channel coupled to the server that carries the plurality of data
4 packets to a wired network from the server, the wired channel also being coupled to the
5 central transmission unit to provide the plurality of data packets to the central
6 transmission unit for transmission to the client equipment.

1 18. The system for data packet transmission of claim 13, wherein, the unit
2 controller controls selective transmission of the data packets by calculating a probability
3 of higher priority packets being delivered prior to play-out times for the higher priority
4 packets and transmitting a packet only if its probability is greater than a set threshold.

1 19. The system for data packet transmission of claim 13, wherein the unit
2 controller determines whether sufficient time remains before a scheduled play-out time of
3 a previously not transmitted packet and, if so, controls the unit transceiver and unit buffer
4 to transmit the previously skipped packet.

1 20. The system for data packet transmission of claim 13, wherein the unit
2 controller controls selective transmission by the unit transceiver based on conditions of
3 the wireless channel upon which the data packets are transmitted.

1 21. The system for data packet transmission of claim 13, wherein the
2 controller generates a transmission schedule, which includes the rates at which the data
3 packets will be played-out by the client equipment.

1 22. The system for data packet transmission of claim 13, wherein the set
2 threshold is between 0.7 and 0.9.

1 23. The system for data packet transmission of claim 13, wherein the central
2 transmission unit is a base station and the transmission channel is a wireless channel.